USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

helping people help the land

Hueston Pence

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>
> ***- Hueston Pence***
> ***Almond Grower***

Hueston Pence - one of 6,000 central California growers who produce 80 percent of the world's almonds.

A WELL DESIGNED DRIP SYSTEM HAS:

- Adequate submain pipeline and tubing sizes
- A well chosen filter/sand separator as recommended by the tubing manufacturer
- An automatic filter backflush
- An automatic chemigation system to inject fertilizer, chlorine and acid
- A check valve or equivalent backflow prevention to prevent source contamination
- Application rates that don't cause runoff
- Occasional evaluations for feedback on distribution uniformity

Almond trees love dry, hot summers - the very weather commonly found in California's central valley.

In the heat of summer, a mature almond tree growing in the valley can consume up to 250 gallons of water a day.

Pence inspects a filter used to clean water before it flows through drip hose lines to irrigate his almond trees. Photos by Brian Ziegler

When temperatures soar, or worse, when drought hits, valley growers scramble to find ways to conserve water. One of those who faced this challenge and overcame it is **Hueston Pence**.

Pence is one of 6,000 almond growers in the valley. Together they produce 80 percent of the world's almonds and 100 percent of the U.S. commercial supply.

For years, Pence irrigated his almond trees by pumping water from beneath his land and then flooding his orchard with it. He admits it is not the most efficient way to water his crop.

"We wanted to reduce how much water we'd been applying and using a drip system is a marvelous way to go," said Pence.

Dr. Garry Ford, a soil conservationist with the USDA Natural Resources Conservation Service (NRCS) in Madera, Calif., agrees.

"When you use flood irrigation, you literally water everything, including weeds in the middle of a row. Drip irrigation is targeted to the specific plant so that it's getting an adequate amount of water," said Ford.

To help pay for the drip system he wanted, Pence applied and qualified for financial assistance through the NRCS Environmental Quality Incentives Program (EQIP).

He says the experience working with the agency, and the contractor who installed the system, was phenomenal. "They're really concerned about the environment and conserving water. They worked real

hard to make sure it works," Pence added.

Ford assisted Pence to make sure the contractor followed the agency's design to end up with a system that met Pence's needs.

First, Ford verified that water pipe trenches were dug at the correct depth and that the pipes laid in them were the right size.

He then made follow up inspections to examine system pressure and the water application rate.

"We do measurements to see if it's doing what it's supposed to - deliver irrigation water according to NRCS speci-fications," said Ford.

He ensured that drip emitters delivered water within an acceptable range based on a formula using gallons per hour.

The process involved collecting water from an emitter for two minutes. It is measured in a graduated cylinder and then a calculation is made to determine the number of gallons per hour that it's sending out.

When Ford was finished, he provided Pence with data on the actual amount of water the system was sending to the trees and made recommendations on how to operate the drip system most efficiently.

Above: *Pence's drip irrigation system conserves water and is more efficient because it targets only his almond trees.*

Below: *Dr. Garry Ford measures water emitted from the drip system to determine how much it is sending out per hour.*

Pence says in addition to increasing his almond production, the system will cut his water consumption in half. He adds that it will also free him up to do other things.

"Now, I don't have to be out here watering my trees 24 hours a day. I can just let the system run. It takes care of itself," concluded Pence.

Growers who qualify for the type of EQIP assistance that Pence received are offered payments on a per acre basis.

The dollar amount is subject to change from one year to the next due to market fluctuations.

Applicants have one year from the date a contract is signed with NRCS to install their system.

The drip irrigation program is not available in all California counties.

Applicants should contact their local NRCS office, listed in the phone book under U.S. Department of Agriculture, to determine if such assistance is offered. Information is also available on the internet at **www.ca.nrcs.usda.gov**.